

AD-R169 880 A PRELIMINARY ASSESSMENT OF POLLUTION FROM PASSENGER
CARS AND BUSES AT ST. (U) FEDERAL AVIATION
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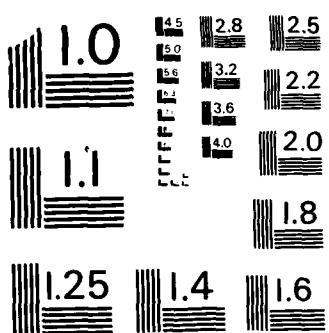
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MICROCOPY RESOLUTION TEST CHART
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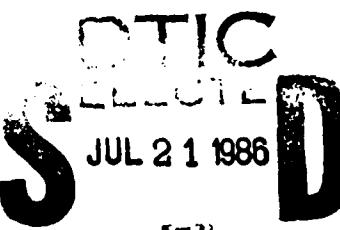
A PRELIMINARY ASSESSMENT OF POLLUTION FROM PASSENGER CARS
AND BUSES AT STAPLETON INTERNATIONAL AIRPORT



U. S. Department of Transportation
FEDERAL AVIATION ADMINISTRATION
Office of Environment and Energy
Washington, D. C., 20591

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H. M. Segal

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Technical Report Documentation Page

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16. Abstract This report summarizes the results of an air quality modeling exercise for Stapleton International Airport. The analysis identifies the impact of automobiles and mini-buses on air quality at the airport. Concentrations of Carbon Monoxide were estimated at seven receptors placed at critical locations in the terminal area. The Graphical Input Microcomputer Model was used in this screening analysis.			
The following assumptions were used in the analysis: 1. vehicle activity = maximum, 2. wind speed = 1 meter per second, 3. wind directions = 270 and 240 degrees, 4. temperature = 0 degrees F, and 5. Pasquill/Gifford stability class was "D".			
The maximum one hour concentration at the most critical receptor was 26 mg/m ³ . The one hour National Ambient Air Quality Standard for Carbon Monoxide is 40 mg/m ³ .			
17. Key Words AIR POLLUTION, DISPERSION MODEL, EMISSIONS MODEL, MICROCOMPUTER	18. Distribution Statement THIS DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VA. 22161		
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A PRELIMINARY ASSESSMENT OF POLLUTION FROM PASSENGER CARS
AND BUSES AT STAPLETON INTERNATIONAL AIRPORT

A series of modeling runs was made to calculate the concentrations of pollutants from motor vehicles operating at Stapleton International Airport (DEN). The Graphical Input Microcomputer Model (GIMM), which was demonstrated to Environmental Protection Agency (EPA), Federal Aviation Administration (FAA), Airport Authority, and Colorado State personnel on April 2-4, was employed in this analysis. This model and its scenario were modified to reflect comments by state personnel at the April 2 meeting. As a result, there are now three route scenarios: one for the main traffic flow at the airport, and the other two for mini-bus travel to the north and south parking and car rental areas. In addition the model now incorporates the high altitude version of the Mobile III emissions model.

In addition to evaluating the environmental impact of motor vehicles, the model has the capability to evaluate the environmental impact of aircraft. This capability was not exercised because persons at the April 2 meeting seemed to be primarily interested in passenger vehicle and mini-bus flow around the airport terminal.

The entire analysis is for screening purposes only and includes extreme conditions for all parameters. The status of the GIMM model (1) is that it is in the advanced stages of development but is not fully validated. Initial validation checks have been made and full validation is expected by January 1987.

Results are summarized for the main pollutant of concern at airports - carbon monoxide (CO). However, emission rates and concentrations for all five criteria pollutants are listed. Emission data for the carbon monoxide, hydrocarbons and nitrogen oxides criteria pollutants were extracted directly from the latest version of AP-42 (2). However, emission data for the remaining pollutants, sulfur oxides and particulates, were not well defined in this document. Their values were obtained from an earlier version of AP-42 and telephone contacts with appropriate industrial personnel.

Three scenarios are reported; one for the main vehicular travel (primarily autos) (Figures 1-3), and the others for mini-bus travel to the airport's south (Figures 4-6) and north (Figures 7-9) parking and car rental areas. Each scenario report has the following format:

1. an airport map showing the route traversed
2. a printout of results for a wind direction of 270 degrees
3. a printout of results for a wind direction of 240 degrees

Roadway numbers are displayed on the map near each roadway. The seven receptors are identified by Roman numerals I thru VII. Vehicular activity is noted on the right side of each map. Maximum concentrations occur at

receptors I, II, and III. Concentrations at these receptors for each scenario are plotted in Figure 10 which also lists the meteorological and vehicle activity assumptions of all computer runs. Total concentrations from passenger, ancillary and mini-bus vehicles are obtained by adding up the corresponding receptor values of all three scenarios.



Availability		Avail. Min. or Dist	Specifical
A1			

PASSENGER AND ANCILLARY VEHICLE FLOW
(STAPLETON INTERNATIONAL AIRPORT)

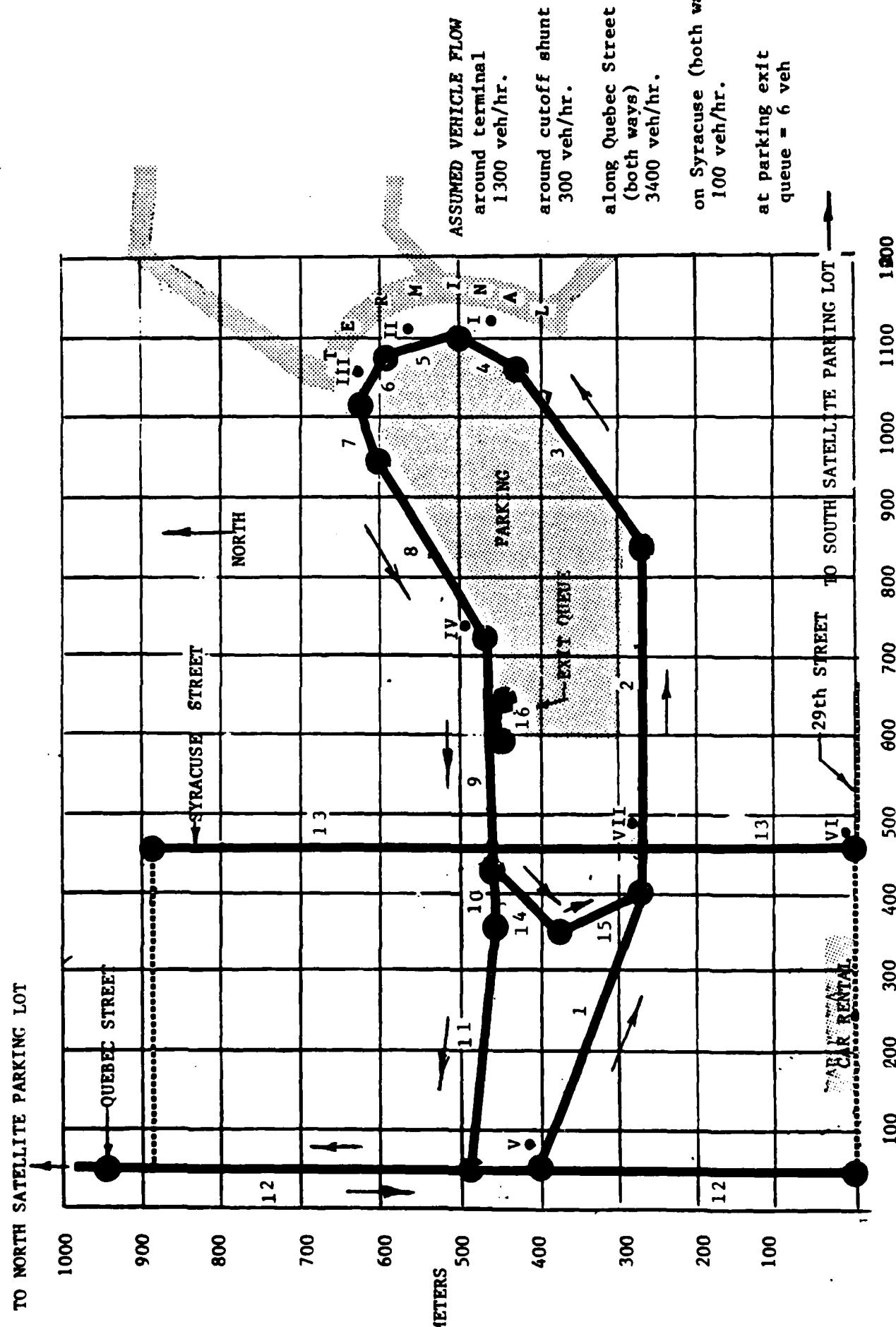


Figure 1

PASSENGER AND ANCILLARY VEHICLE POLLUTION ON ROUTES AROUND
DENVER INTERNATIONAL AIRPORT

Temperature = 0 degrees F.
Wind Direction = 270 degrees

EMISSION REPORT (ROADWAYS)
JUN-18- (1400 HR.)

INPUTS

OUTPUTS

COORDINATES OF SOURCES (M)		INITIAL		(MOBILE 3)		EMISSION RATES													
ORIGIN AT (0 , 0)		PARAMETERS(M)																	
ROAD:																			
#	X1	Y1	X2	Y2	Z	Y	WT.	HR	START	(F)	CO	HC	NOX	SOX	PART				
1	46	397	398	263	1.5	13	11	1	1000	30	010	011986	4.81E00	4.45E-11	2.49E-11	5.87E-4	2.02E-2		
2	398	264	844	263	1.5	13	11	1	1300	30	010	011986	7.40E00	6.86E-11	3.83E-11	9.01E-4	3.11E-2		
3	842	261	1057	424	1.5	13	11	1	1300	20	010	011986	6.58E00	5.58E-11	2.06E-11	5.45E-4	1.29E-2		
4	1056	422	1102	501	1.5	13	11	1	1300	50	010	011986	6.43E00	4.90E-11	7.60E-21	1.85E-4	6.37E-2		
5	1095	501	1069	590	1.5	13	11	1	1300	50	010	011986	6.61E00	5.04E-11	7.81E-21	1.90E-4	6.56E-2		
6	1071	591	1005	622	1.5	13	11	1	1300	50	010	011986	5.13E00	3.91E-11	6.06E-21	1.47E-4	5.07E-2		
7	1005	622	936	594	1.5	13	11	1	1300	50	010	011986	5.11E00	3.89E-11	6.04E-21	1.46E-4	5.07E-2		
8	938	594	718	460	1.5	13	11	1	1300	20	010	011986	6.28E00	5.33E-11	1.97E-11	5.20E-4	1.61E-2		
9	718	460	436	456	1.5	13	11	1	1300	30	010	011986	4.68E00	4.34E-11	2.42E-11	5.71E-4	1.57E-2		
10	432	459	343	445	1.5	13	11	1	1000	30	010	011986	1.15E00	1.07E-11	5.95E-21	1.40E-4	4.85E-2		
11	343	444	51	474	1.5	13	11	1	1000	35	010	011986	3.25E00	3.13E-11	2.00E-11	4.57E-4	1.58E-2		
12	53	873	47	011	1.5	13	11	1	3400	35	010	011986	3.28E00	3.16E00	2.02E00	4.60E-3	1.60E-1		
13	452	874	460	011	1.5	13	11	1	100	30	010	011986	1.12E00	1.03E-11	5.77E-21	1.36E-4	4.69E-2		
14	431	458	350	364	1.5	13	11	1	300	30	010	011986	4.75E-11	4.40E-21	2.46E-21	5.77E-5	2.00E-2		
15	351	363	399	260	1.5	13	11	1	300	30	010	011986	4.35E-11	4.03E-21	2.25E-21	5.63E-5	1.84E-2		
16	600	460	635	460	1.5	13	11	1	QUEUE	01	010	011986	3.23E00	2.43E-11	3.77E-21	8.75E-5	3.03E-2		
														TOTAL	9.55E011	8.44E001	3.98E001	9.32E-31	3.23E-11

DISPERSION REPORT

INPUTS

OUTPUT

DATE	HR/W/S/HWD	P/G	RECEPTOR	CONCENTRATION GM/M^3
	IM/S	DEG	MM	
NO.				
JUN-18-86:14	1:270	4	1	11171 4561 11.76E-21 1.39E-31 3.23E-41 7.74E-71 2.67E-51
JUN-18-86:14	1:270	4	2	11051 5601 12.09E-21 1.63E-31 3.23E-41 7.87E-71 2.72E-51
JUN-18-86:14	1:270	4	3	10431 6101 11.82E-21 1.41E-31 2.67E-41 6.46E-71 2.24E-51
JUN-18-86:14	1:270	4	4	7351 4881 14.04E-31 3.56E-41 1.68E-41 3.88E-71 1.34E-51
JUN-18-86:14	1:270	4	5	821 4061 17.78E-31 7.49E-41 4.79E-41 1.09E-61 3.78E-51
JUN-18-86:14	1:270	4	6	4771 121 19.95E-41 9.43E-51 5.73E-51 1.32E-71 4.57E-61
JUN-18-86:14	1:270	4	7	4841 2781 13.47E-31 3.25E-41 1.89E-41 4.40E-71 1.52E-51

Figure 2

PASSENGER AND ANCILLARY VEHICLE POLLUTION ON ROUTES AROUND
DENVER INTERNATIONAL AIRPORT

Temperature = 0 degrees F.
Wind Direction = 290

EMISSION REPORT (ROADWAYS)
JUN-16- (1400 HR.)

INPUTS										OUTPUTS							
COORDINATES OF SOURCES (M)				INITIAL		(MOBILE 3)				EMISSION RATES							
ORIGIN AT (0 , 0)				PARAMETERS(M)													
ROAD: SIG : SIG : PLUME:CARS/IMPH:XCOLD:TEMP:YEAR:																	
#	X1	Y1	X2	Y2	Z	Y	HT.	HR	I	STARTI (F)	CO	HC	NOX	SOX	PART		
1	46.	397	398,	263	1.5	13	11	1000	30	010	019861	4.81E001	4.45E-11	2.49E-11	5.87E-4	2.03E-1	
2	398,	264	844,	263	1.5	13	11	1300	30	010	019861	7.40E001	6.86E-11	3.83E-11	9.01E-4	3.11E-1	
3	842,	261	1057,	424	1.5	13	11	1300	20	010	019861	6.58E001	5.58E-11	2.06E-11	5.45E-4	1.93E-1	
4	1056,	422	1102,	501	1.5	13	11	1300	5	010	019861	6.43E001	4.90E-11	7.60E-21	1.85E-4	6.97E-1	
5	1099,	501	1069,	590	1.5	13	11	1300	5	010	019861	6.61E001	5.04E-11	7.81E-21	1.90E-4	6.5eE-1	
6	1071,	5-	1005,	622	1.5	13	11	1300	5	010	019861	5.13E001	3.91E-11	6.06E-21	1.47E-4	5.07E-1	
7	1005,	622	938,	594	1.5	13	11	1300	5	010	019861	5.11E001	3.89E-11	6.04E-21	1.46E-4	5.07E-1	
8	936,	594	718,	460	1.5	13	11	1300	20	010	019861	6.28E001	5.33E-11	1.97E-11	5.20E-4	1.80E-1	
9	718,	460	436,	450	1.5	13	11	1300	30	010	019861	4.68E001	4.34E-11	2.42E-11	5.71E-4	1.57E-1	
10	432,	459	343,	445	1.5	13	11	1000	30	010	019861	1.15E001	1.07E-11	5.95E-21	1.40E-4	4.65E-1	
11	343,	444	51,	474	1.5	13	11	1000	35	010	019861	3.25E001	3.13E-11	2.00E-11	4.57E-4	1.55E-1	
12	53,	873	47,	011.5	13	11	1	3400	35	010	019861	3.28E001	3.16E001	2.02E001	4.60E-3	1.60E-1	
13	452,	874	460,	011.5	13	11	1	100	30	010	019861	1.12E001	1.03E-11	5.77E-21	1.36E-4	4.65E-1	
14	431,	459	350,	364	1.5	13	11	1	300	30	010	019861	4.75E-11	4.40E-21	2.46E-21	5.77E-5	2.00E-1
15	351,	363	399,	260	1.5	13	11	1	300	30	010	019861	4.35E-11	4.03E-21	2.25E-21	5.33E-5	1.84E-1
16	600,	460	635,	460	1.5	13	11	QUEUE	0	010	019861	3.23E001	2.43E-11	3.77E-21	8.75E-5	2.03E-1	
TOTAL :										8.55E011	8.44E001	3.98E001	9.32E-31	3.23E-1			

DISPERSION REPORT

INPUTS				OUTPUT										
DATE	HR	W/S	WD	P/6	RECEPTOR	NO.	X	Y	CO	HC	NOX	SOX	PART	CONCENTRATION GM/M^3
				4M/S/DEG/A=11										
JUN-18-86(14)	112401	41	1	1116	459	1	1116	459	11.12E-21	8.77E-41	11.83E-41	4.49E-71	1.55E-51	
JUN-18-86(14)	112401	41	2	1106	563	1	1106	563	11.82E-21	1.40E-31	2.60E-41	6.26E-71	2.17E-51	
JUN-18-86(14)	112401	41	3	1052	627	1	1052	627	12.48E-21	1.93E-31	3.96E-41	9.67E-71	3.34E-51	
JUN-18-86(14)	112401	41	4	735	491	1	735	491	16.56E-31	5.92E-41	3.84E-41	7.12E-71	2.46E-51	
JUN-18-86(14)	112401	41	5	84	410	1	84	410	11.06E-21	1.01E-31	6.21E-41	11.42E-61	4.93E-51	
JUN-18-86(14)	112401	41	6	480	111	1	480	111	11.97E-41	1.83E-51	1.02E-51	2.40E-81	8.30E-71	
JUN-18-86(14)	112401	41	7	485	280	1	485	280	11.10E-31	1.04E-41	6.41E-51	1.47E-71	5.10E-61	

Figure 3

DIESEL BUS ROUTES
 SOUTH ACCESS - PASSENGER PARKING AND CAR RENTAL
 (STAPLETON INTERNATIONAL AIRPORT)

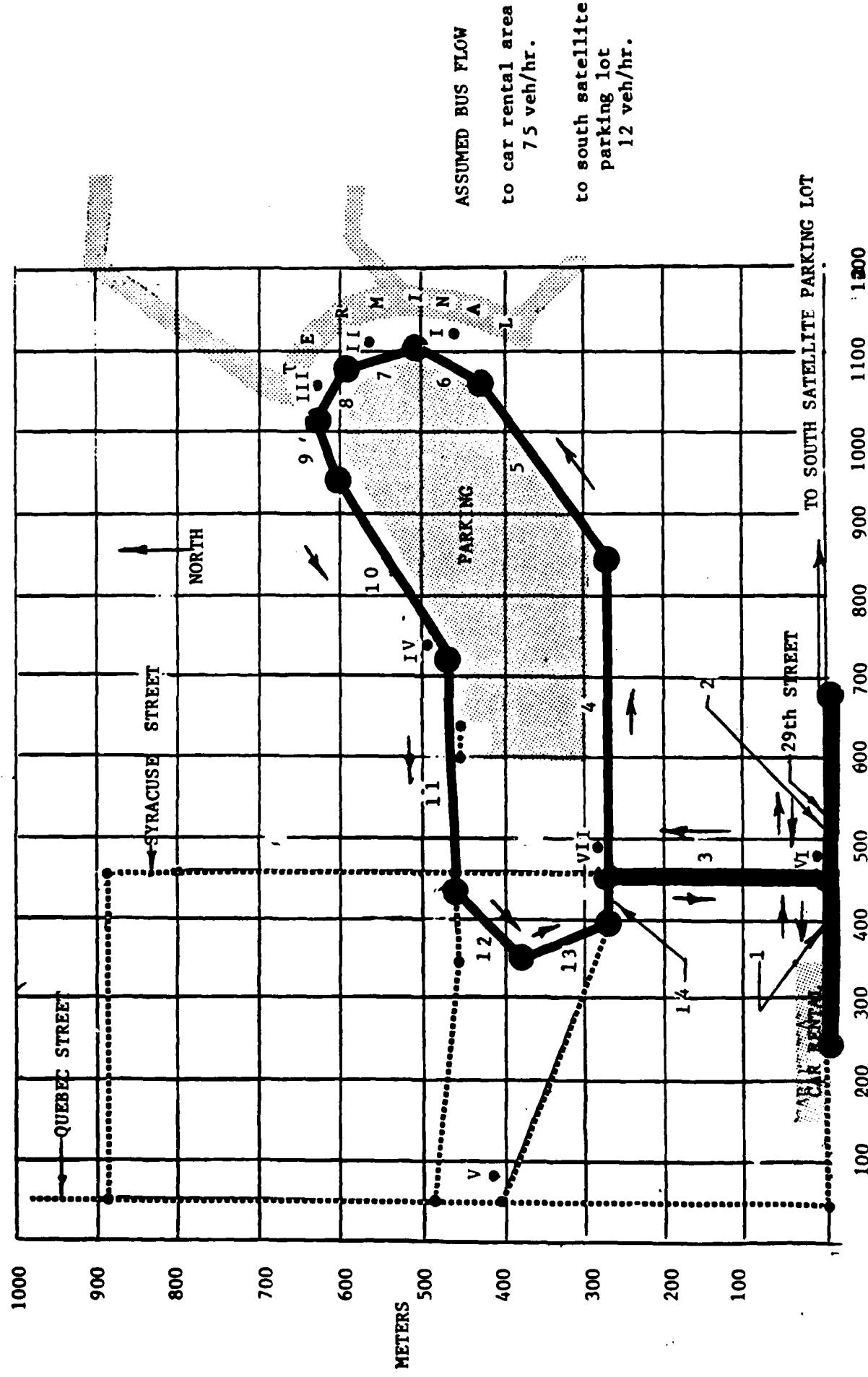


FIGURE 4

**BUS POLLUTION ON ROUTES TO
CAR RENTAL AND SOUTH PARKING AREAS**

Temperature = 0 degrees F.
Wind Direction = 270 degrees

EMISSION REPORT (ROADWAYS)
JUN-19- (1400 HR.)

INPUTS										OUTPUTS							
COORDINATES OF SOURCES (M)				INITIAL		(MOBILE 3)				EMISSION RATES							
ORIGIN AT (0 , 0)				PARAMETERS(M)													
ROAD:																	
#	X1	Y1	X2	Y2	Z	Y	Ht.	HR	START (F)	CO	HC	NOX	SOX	PART	GM/SEC		
1	245.	0	457.	0	11.5	13	11	1	150	20	000	0119861	4.22E-11	3.35E-21	1.85E-21	4.95E-51	1.71E-3
2	456.	0	670.	0	11.5	13	11	1	241	20	000	0119861	6.82E-21	5.41E-31	2.98E-31	7.99E-61	2.76E-4
3	459.	0	456.	267	11.5	13	11	1	174	30	000	0119861	4.19E-11	3.82E-21	3.03E-21	7.23E-51	2.50E-3
4	453.	266	841.	264	11.5	13	11	1	871	30	000	0119861	3.02E-11	2.75E-21	2.19E-21	5.20E-51	1.86E-3
5	843.	267	1063.	427	11.5	13	11	1	871	20	000	0119861	3.14E-11	2.49E-21	1.37E-21	3.68E-51	1.27E-3
6	1061.	424	1106.	504	11.5	13	11	1	871	5	000	0119861	3.06E-11	1.95E-21	5.06E-31	1.24E-51	4.29E-4
7	1106.	505	1077.	592	11.5	13	11	1	871	5	000	0119861	3.06E-11	1.95E-21	5.06E-31	1.24E-51	4.26E-4
8	1077.	591	1013.	622	11.5	13	11	1	871	5	000	0119861	2.37E-11	1.51E-21	3.92E-31	9.61E-61	3.33E-4
9	1009.	620	943.	597	11.5	13	11	1	871	5	000	0119861	2.33E-11	1.49E-21	3.86E-31	9.45E-61	3.27E-4
10	942.	597	717.	463	11.5	13	11	1	871	20	000	0119861	3.02E-11	2.40E-21	1.32E-21	3.55E-51	1.22E-3
11	717.	462	435.	457	11.5	13	11	1	871	30	000	0119861	2.21E-11	2.02E-21	1.60E-21	3.81E-51	1.32E-3
12	435.	459	351.	370	11.5	13	11	1	871	30	000	0119861	9.60E-21	8.74E-31	6.95E-31	1.65E-51	5.71E-4
13	348.	370	394.	263	11.5	13	11	1	871	30	000	0119861	9.14E-21	8.32E-31	6.61E-31	1.57E-51	5.42E-4
14	398.	267	453.	266	11.5	13	11	1	871	30	000	0119861	4.32E-21	3.93E-31	3.12E-31	7.42E-61	2.57E-4
TOTAL :										3.36E001	2.64E-11	1.51E-11	3.76E-41	1.30E-21			

DISPERSION REPORT

INPUTS				OUTPUT												
DATE	HR	W/SWD	P/G	RECEPTOR	CONCENTRATION GM/M^3											
					NO.	X	Y		CO	HC	NOX	SOX	PART			
JUN-19-86(14)	11270	4	1	1119	454	17.46E-4	4.94E-5	1.61E-5	3.93E-8	1.36E-6						
JUN-19-86(14)	11270	4	2	1109	556	11.10E-3	7.12E-5	2.06E-5	5.11E-8	1.76E-6						
JUN-19-86(14)	11270	4	3	1056	624	19.51E-4	6.09E-5	1.61E-5	3.97E-8	1.37E-6						
JUN-19-86(14)	11270	4	4	738	487	17.18E-5	6.54E-6	5.20E-6	1.24E-8	4.27E-7						
JUN-19-86(14)	11270	4	5	83	410	0.00E00	0.00E00	0.00E00	0.00E00	0.00E00						
JUN-19-86(14)	11270	4	6	476	12	19.99E-4	8.50E-5	5.76E-5	1.44E-7	4.97E-6						
JUN-19-86(14)	11270	4	7	484	279	11.40E-4	1.28E-5	1.01E-5	2.41E-8	8.32E-7						

Figure 5

**BUS POLLUTION ON ROUTES TO
CAR RENTAL AND SOUTH PARKING AREAS**

Temperature = 0 degrees F.
Wind Direction = 240 degrees

EMISSION REPORT (ROADWAYS)
JG-19- (1400 HF.)

INPUTS

OUTPUTS

COORDINATES OF SOURCES (M):				INITIAL		(MOBILE 3)			EMISSION RATES						
ORIGIN AT (0 , 0)				PARAMETERS(M)											
ROAD													SIG : SIG : PLUME : CARS / MPH : %COLD : TEMP : YEAR		
#	X1	Y1	X2	Y2	Z	Y	HT.	HR	START (F)	CO	HC	NOX	SOX	PART	
1	245,	0	457,	0	1.5	13	11	1	150:20:000:	0:1986:	4.22E-11	3.35E-21	1.85E-21	4.95E-51	1.71E-31
2	456,	0	670,	0	1.5	13	11	1	241:20:000:	0:1986:	6.82E-21	5.41E-31	2.98E-31	7.99E-61	2.76E-41
3	459,	0	456,	267	1.5	13	11	1	1741:30:000:	0:1986:	4.19E-11	3.82E-21	3.03E-21	7.23E-51	2.53E-31
4	456,	266	841,	264	1.5	13	11	1	871:30:000:	0:1986:	3.02E-11	2.75E-21	2.19E-21	5.20E-51	1.20E-31
5	843,	267	1063,	427	1.5	13	11	1	871:20:000:	0:1986:	3.14E-11	2.49E-21	1.37E-21	3.68E-51	1.27E-31
6	1061,	424	1106,	504	1.5	13	11	1	871:51:000:	0:1986:	3.06E-11	1.95E-21	5.06E-31	1.24E-51	4.28E-41
7	1106,	505	1077,	592	1.5	13	11	1	871:51:000:	0:1986:	3.06E-11	1.95E-21	5.06E-31	1.24E-51	4.28E-41
8	1077,	591	1013,	622	1.5	13	11	1	871:51:000:	0:1986:	2.37E-11	1.51E-21	3.92E-31	9.61E-61	3.33E-41
9	1009,	620	943,	597	1.5	13	11	1	871:51:000:	0:1986:	2.33E-11	1.49E-21	3.86E-31	9.45E-61	3.27E-41
10	942,	597	717,	463	1.5	13	11	1	871:20:000:	0:1986:	3.02E-11	2.40E-21	1.32E-21	3.55E-51	1.22E-31
11	717,	462	435,	457	1.5	13	11	1	871:30:000:	0:1986:	2.21E-11	2.02E-21	1.60E-21	3.81E-51	1.32E-31
12	435,	455	351,	376	1.5	13	11	1	871:30:000:	0:1986:	9.60E-21	8.74E-31	6.95E-31	1.65E-51	5.71E-41
13	348,	370	394,	263	1.5	13	11	1	871:30:000:	0:1986:	9.14E-21	8.32E-31	6.61E-31	1.57E-51	5.42E-41
14	398,	267	453,	266	1.5	13	11	1	871:30:000:	0:1986:	4.32E-21	3.93E-31	3.12E-31	7.42E-61	2.57E-41
TOTAL :										3.36E00:	2.64E-11	1.51E-11	3.76E-41	1.30E-21	

DISPERSION REPORT

INPUTS

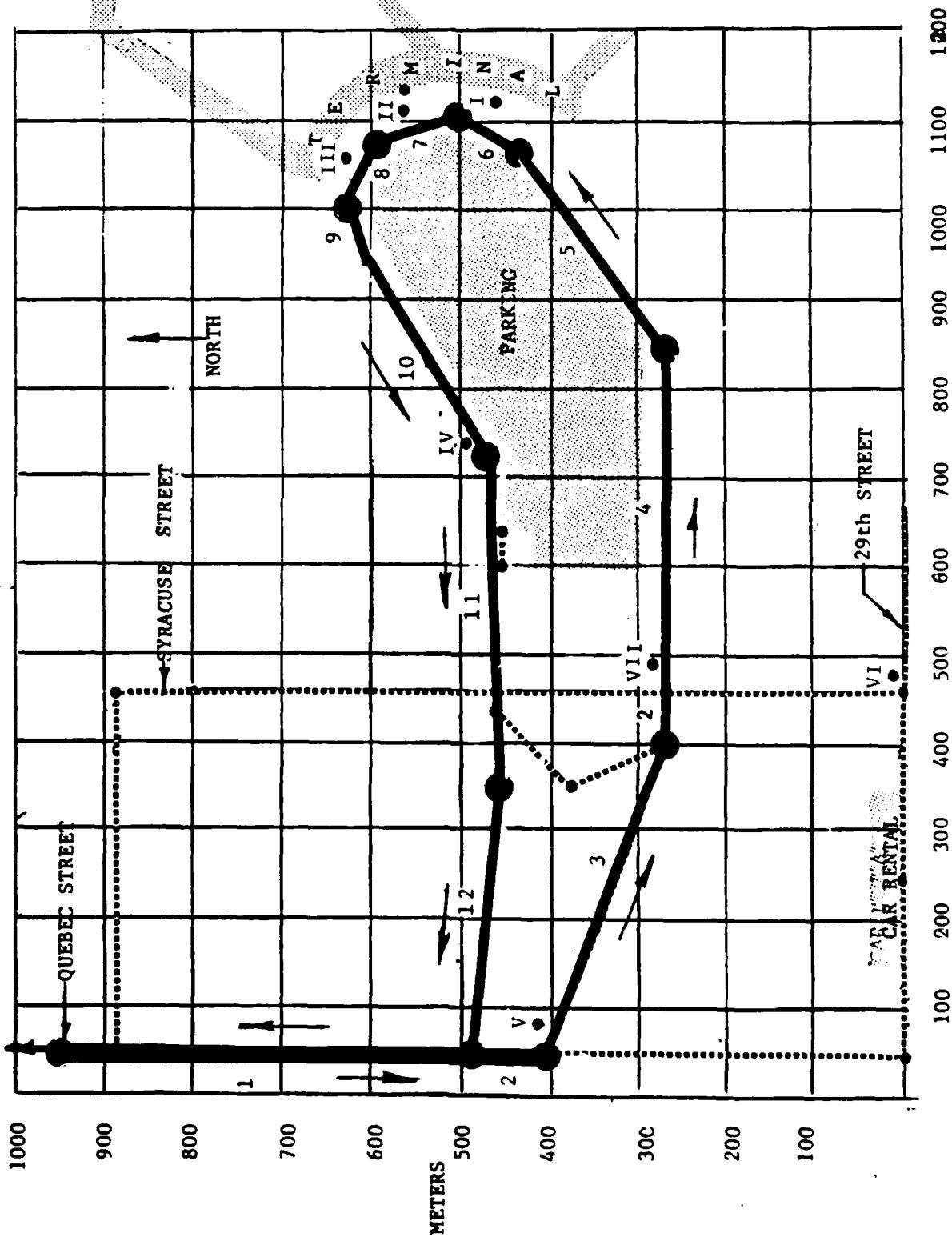
OUTPUT

DATE	HR/W/SWD/P/G: IM/S/DEG/A=11	RECEPTOR	CONCENTRATION GM/M ³							
			NO.	X	Y	CO	HC	NOX	SOX	PART
JUN-19-86:14:	1:240:	41 1	1122	456		16.56E-41	4.87E-51	2.32E-51	5.99E-81	2.07E-61
JUN-19-86:14:	1:240:	41 2	1113	561		19.41E-41	6.22E-51	2.00E-51	4.89E-81	1.69E-61
JUN-19-86:14:	1:240:	41 3	1058	625		11.16E-31	7.66E-51	2.45E-51	6.06E-81	2.10E-61
JUN-19-86:14:	1:240:	41 4	741	491		12.28E-41	2.08E-51	1.65E-51	3.92E-81	1.36E-61
JUN-19-86:14:	1:240:	41 5	84	411		10.00E00	10.00E00	10.00E00	10.00E00	10.00E00
JUN-19-86:14:	1:240:	41 6	478	121		18.45E-41	7.07E-51	4.58E-51	1.16E-71	4.01E-61
JUN-19-86:14:	1:240:	41 7	488	279		13.33E-41	3.03E-51	2.41E-51	5.74E-81	1.98E-61

Figure 6

DIESEL BUS ROUTES
NORTH SATELLITE PARKING LOT
(STAPLETON INTERNATIONAL AIRPORT)

TO NORTH SATELLITE PARKING LOT



METERS

Figure 7

**BUS POLLUTION ON ROUTES TO
NORTH SATELLITE PARKING AREAS**

Temperature = 0 degrees F.
Wind Direction = 270 degrees

EMISSION REPORT (ROADWAYS)
JUN-23- (1400 HR.)

INPUTS										OUTPUTS					
COORDINATES OF SOURCES (M)				INITIAL		(MOBILE 3)				EMISSION RATES					
ORIGIN AT (0 . 0)				PARAMETERS(M)											
RD-D1															
#	X1	Y1	X2	Y2	Z	Y	HT.	HR	START (F)	CO	HC	NOX	SOX	PART	G/M SEC
1	55.	950	53.	483	1.5	13	11	1	501 351 0001	0119861	1.82E-11	1.76E-21	1.57E-21	3.61E-51	1.25E-3
2	50.	485	50.	403	1.5	13	11	1	251 351 0001	0119861	1.60E-21	1.55E-31	1.38E-31	3.17E-61	1.10E-4
3	50.	404	397,	267	1.5	13	11	1	251 301 0001	0119861	8.41E-21	7.66E-31	6.09E-31	1.45E-51	5.61E-4
4	398.	266	842,	266	1.5	13	11	1	251 301 0001	0119861	1.00E-11	9.12E-31	7.24E-31	1.73E-51	5.96E-4
5	841.	266	1062,	429	1.5	13	11	1	251 201 0001	0119861	9.11E-21	7.23E-31	3.99E-31	1.07E-51	3.68E-4
6	1063,	429	1102,	504	1.5	13	11	1	251 51 0001	0119861	8.10E-21	5.16E-31	1.34E-31	3.30E-61	1.14E-4
7	1103.	507	1077,	594	1.5	13	11	1	251 51 0001	0119861	8.70E-21	5.55E-31	1.44E-31	3.52E-61	1.22E-4
8	1076,	594	1008,	626	1.5	13	11	1	251 51 0001	0119861	7.20E-21	4.59E-31	1.19E-31	2.92E-61	1.01E-4
9	1008.	625	941,	601	1.5	13	11	1	251 51 0001	0119861	6.82E-21	4.35E-31	1.13E-31	2.77E-61	9.54E-5
10	942,	602	717,	466	1.5	13	11	1	251 201 0001	0119861	8.73E-21	6.92E-31	3.82E-31	1.02E-51	3.52E-4
11	717.	466	346,	453	1.5	13	11	1	251 301 0001	0119861	8.37E-21	7.62E-31	6.06E-31	1.44E-51	4.98E-4
12	346,	454	50,	484	1.5	13	11	1	251 351 0001	0119861	5.80E-21	5.62E-31	5.01E-31	1.16E-51	4.03E-4
TOTAL										1.01E001	8.30E-21	5.44E-21	1.30E-41	4.51E-3	
DISPERSION REPORT															
INPUTS										OUTPUT					
DATE	HR	W/S	IWD	P/G	RECEPTOR					CONCENTRATION GM/M3					
	MM/DD	DEG	HR	MIN	NO.	X	Y	Z	CO	HC	NOX	SOX	PART		
JUN-23-86	14	112701	41	1	1120	459			12.18E-4	1.48E-5	5.52E-6	1.34E-8	4.62E-7		
JUN-23-86	14	112701	41	2	1109	564			13.01E-4	1.99E-5	6.24E-6	1.54E-8	5.31E-7		
JUN-23-86	14	112701	41	3	1056	627			13.15E-4	2.04E-5	5.91E-6	1.44E-8	4.98E-7		
JUN-23-86	14	112701	41	4	736	491			13.73E-5	3.50E-6	12.93E-6	6.87E-9	2.38E-7		
JUN-23-86	14	112701	41	5	81	411			13.87E-5	3.75E-6	13.34E-6	7.68E-9	2.66E-7		
JUN-23-86	14	112701	41	6	477	101			10.00E001	10.00E001	10.00E001	10.00E001	10.00E001		
JUN-23-86	14	112701	41	7	487	280			13.10E-5	2.82E-6	12.24E-6	5.34E-9	1.85E-7		

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BUS POLLUTION ON ROUTES TO
NORTH SATELLITE PARKING AREAS

Temperature = 0 degrees F.
Wind Direction = 240 degrees

EMISSION REPORT (ROADWAYS)
JUN-23- (1400 HR.)

INPUTS										OUTPUTS							
COORDINATES OF SOURCES (M)				INITIAL		(MOBILE 3)				EMISSION RATES							
ORIGIN AT (0 , 0)				PARAMETERS(M)													
ROAD: SIG SIG PLUME CARS/IMPH %COLD %TEMP %YEAR GM/SEC																	
W	X1	Y1	X2	Y2	Z	Y	HT.	HR	START	(F)	CO	HC	NOX	SOX	PART		
11	55,	950,	53,	483	1.5	13	11	1	50	35	000	011986	1.82E-11	1.76E-21	1.57E-21	3.61E-51	1.25E-3
21	56,	485,	50,	403	1.5	13	11	1	25	35	000	011986	1.60E-21	1.55E-31	1.38E-31	3.17E-61	1.10E-4
31	50,	404,	397,	267	1.5	13	11	1	25	30	000	011986	8.41E-21	7.66E-31	6.09E-31	1.45E-51	5.01E-4
41	398,	266,	842,	266	1.5	13	11	1	25	30	000	011986	1.00E-11	9.12E-31	7.24E-31	1.73E-51	5.98E-4
51	841,	266,	1062,	429	1.5	13	11	1	25	20	000	011986	9.11E-21	7.23E-31	3.99E-31	1.07E-51	3.49E-4
61	1063,	429,	1102,	504	1.5	13	11	1	25	5	000	011986	8.10E-21	5.16E-31	1.34E-31	3.30E-61	1.14E-4
71	1103,	507,	1077,	594	1.5	13	11	1	25	5	000	011986	8.70E-21	5.55E-31	1.44E-31	3.52E-61	1.22E-4
81	1076,	594,	1008,	626	1.5	13	11	1	25	5	000	011986	7.20E-21	4.59E-31	1.19E-31	2.92E-61	1.01E-4
91	1008,	626,	941,	601	1.5	13	11	1	25	5	000	011986	6.82E-21	4.35E-31	1.13E-31	2.77E-61	9.54E-5
101	942,	602,	717,	466	1.5	13	11	1	25	20	000	011986	8.73E-21	6.92E-31	3.82E-31	1.02E-51	3.52E-4
111	717,	466,	346,	453	1.5	13	11	1	25	30	000	011986	8.37E-21	7.62E-31	6.06E-31	1.44E-51	4.96E-4
121	346,	454,	50,	484	1.5	13	11	1	25	35	000	011986	5.80E-21	5.62E-31	5.01E-31	1.16E-51	4.00E-4
										TOTAL	1.01E001	8.30E-21	5.44E-21	1.30E-41	4.51E-3		
DISPERSION REPORT																	
INPUTS										OUTPUT							
DATE	HR	M	S	WD	P/G	RECEPTOR				CONCENTRATION GM/M^3							
						NO.	X	Y		CO	HC	NOX	SOX	PART			
JUN-23-86(14)	112401	41	1	1120	458					11.65E-41	1.21E-51	5.47E-61	1.42E-81	4.88E-71			
JUN-23-86(14)	112401	41	2	1109	564					12.74E-41	1.78E-51	5.14E-61	1.25E-81	4.33E-71			
JUN-23-86(14)	112401	41	3	1056	626					13.34E-41	2.19E-51	6.74E-61	1.67E-81	5.75E-71			
JUN-23-86(14)	112401	41	4	736	490					17.63E-51	6.95E-61	5.52E-61	1.31E-81	4.54E-71			
JUN-23-86(14)	112401	41	5	84	410					17.31E-51	6.67E-61	5.32E-61	1.26E-81	4.37E-71			
JUN-23-86(14)	112401	41	6	477	13					10.00E001	0.00E001	0.00E001	0.00E001	0.00E001			
JUN-23-86(14)	112401	41	7	489	278					1.34E-71	2.22E-81	9.70E-91	0.00E001	0.00E001			

Figure 9

CARBON MONOXIDE POLLUTION FROM VEHICLES NEAR THE TERMINAL AT
STAPLETON INTERNATIONAL AIRPORT
(worst case scenario)

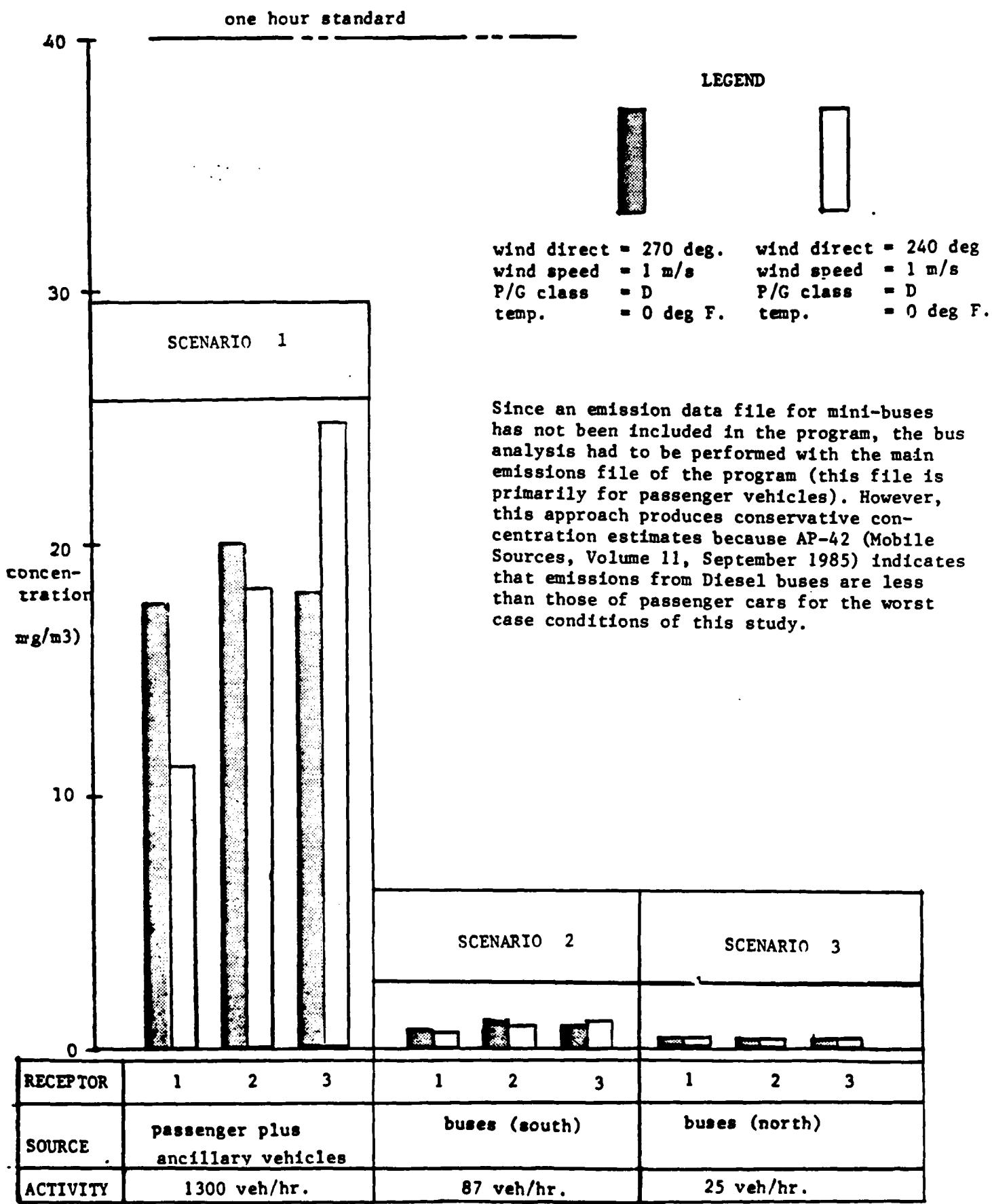


Figure 10

REFERENCES

1. H. M. Segal; "Microcomputer Graphics in Atmospheric Dispersion Modeling"; Journal of the Air Pollution Control Association"; 23:6; June 1983
2. "Compilation of Air Pollution Emission Factors"; Volume II-Mobile Sources; AP-42 - Fourth Edition; Environmental Protection Agency-Motor Vehicle Emission Laboratory; Ann Arbor, MI.; September 1985

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